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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/935,710	08/24/2001	Tetsuya Kojima	Q65933	9664

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SUGHRUE, MION, ZINN, MACPEAK & SEAS  
2100 Pennsylvania Avenue, N.W.  
Washington, DC 20037

EXAMINER

DEBERADINIS, ROBERT L

ART UNIT	PAPER NUMBER
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2836

DATE MAILED: 12/02/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/935,710

Applicant(s)

KOJIMA ET AL.

Examiner

Robert DeBeradinis

Art Unit

2836

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

1) ☒ Responsive to communication(s) filed on 15 September 2003.

2a) ☐ This action is FINAL.

2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

4) ☒ Claim(s) 1-21 is/are pending in the application.

4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5) ☒ Claim(s) 19-21 is/are allowed.

6) ☒ Claim(s) 1-18 is/are rejected.

7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.

8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on 24 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. §§ 119 and 120

12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☒ All b) ☐ Some \* c) ☐ None of:

1. ☒ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.

3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

### Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.

4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: \_\_\_\_\_.

Art Unit: 2836

### **DETAILED ACTION**

The reply filed 9/15/03 consists of amending claims 3, 5-9, adding new claims 12-21 and remarks related to rejection of claims.

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over FOREMAN 5,521,444 in view of CORCORAN 5,031,992 in further view of KOYAMA 5,331,354 and JP 222489.

Art Unit: 2836

Regarding claims 1, 16.

FOREMAN discloses a rotary transformer (80) composed of a rotor (12) that has a transformer winding and an annular stator (10) that is concentric with the rotor and has a transformer stator winding;

A power output of the rotary transformer connected to a rectifier bridge circuit for supplying power to the rotor side of the rotary transformer.

FOREMAN does not disclose a rotating –side light emitting or a rotating light receiving element provided on the rotor; and

A stationary-side light emitting element or a stationary-side light receiving element that is fixedly disposed to oppose the rotating side light emitting element or the rotating- side light receiving element,

Wherein electric power is supplied to the rotor through the rotary transformer to perform optical communication, and

A power output of the rotary transformer is divided into two outputs, one being directly coupled to the electric circuit while the other being coupled to the electric circuit through the intermediary of storage means composed of a capacitor or a storage cell.

CORCORAN teaches a rotating-side light emitting element and a stationary side light receiving element.

The Japanese reference, JP 222489 teaches light emitting and light receiving elements.

KOYAMA teaches a power supply including a bridge (27a) and a capacitor (27b) forming a rectifier circuit (27) being coupled to the electric circuit (26) through the intermediary of the storage means composed of a capacitor (27b).

It would have been obvious to one having ordinary skill in the art at the time of this invention to have modified FOREMAN to include a rotating –side light emitting or a rotating light receiving element provided on the rotor; and

A stationary-side light emitting element or a stationary-side light receiving element that is fixedly disposed to oppose the rotating side light emitting element or the rotating- side light receiving element,

Wherein electric power is supplied to the rotor through the rotary transformer to perform optical communication, and

A power output of the rotary transformer is divided into two outputs, one being directly coupled to the electric circuit while the other being coupled to the electric circuit through the intermediary of storage means composed of a capacitor or a storage cell.

The motivation would to supply power to circuits and allow two way communication signals between a stationary part of a system and a rotating part of the system.

Regarding claim 2.

FOREMAN in view of CORCORAN in further view of KOYAMA and JP 222489 Paten disclose a rotary contactless connector according to claim 1.

FOREMAN in view of CORCORAN in further view of KOYAMA and JP 222489 Patent do not disclose a nonmagnetic and non-magnetized bearing between the rotor and the annular stator.

The Examiner takes official notice that nonmagnetic and non-magnetized bearings are well known in the art.

Art Unit: 2836

It would have been obvious to one having ordinary skill in the art at the time of this invention to provide a nonmagnetic and non-magnetized bearing between the rotor and the annular stator. The motivation would be to provide a bearing that would not inter-fear with the magnetic field coupling the stator and the rotor to reduce the possibility of noise generated by the bearing rotation.

Regarding claims 3, 12, 13.

FOREMAN in view of CORCORAN in further view of KOYAMA and JP 222489 Paten disclose a rotary contactless connector according to claim 1.

FOREMAN in view of CORCORAN in further view of KOYAMA and JP 222489 Paten do not disclose an electric circuit for switchingly driving the rotating-side light emitting element or the rotating-side light receiving element, wherein electric power is supplied to the electric circuit through the intermediary of the rotary transformer.

The Examiner takes official notice that the switching or time multiplexing of communication signals is well known in the art.

It would have been obvious to one having ordinary skill in the art at the time of this invention to provide an electric circuit for switchingly driving the rotating-side light emitting element or the rotating-side light receiving element, wherein electric power is supplied to the electric circuit through the intermediary of the rotary transformer. The motivation would be to time multiplex the communication signals so that information would not be lost when the light emitting element on the stator and the light receiving element on the rotor are not in alignment to transfer information.

Regarding claim 4.

FOREMAN in view of CORCORAN in further view of KOYAMA and JP 222489 Paten disclose a rotary contactless connector according to claim 3.

FOREMAN in view of CORCORAN in further view of KOYAMA and JP 222489

Paten do not disclose wherein the electronic circuit is provide in the rotor.

It would have been obvious to one having ordinary skill in the art at the time of this invention to locate the electronic circuit in the rotary connector. The motivation would be to provide a self contained rotary connector.

Regarding claim 5.

FOREMAN in view of CORCORAN in further view of KOYAMA and JP 222489

Paten disclose a rotary contactless connector according to claim 3.

FOREMAN in view of CORCORAN in further view of KOYAMA and JP 222489

Paten do not disclose wherein at least another rotating-side light emitting element or the rotating-side light receiving element is provide at the central position of the rotor.

The Examiner takes official notice that if the light receiving and the light emitting elements are positioned at the central position of the rotor there would be no need to switchingly drive the elements.

It would have been obvious to one having ordinary skill in the art at the time of this invention to modify FOREMAN wherein at least another rotating-side light emitting element or the rotating-side light receiving element is provide at the central position of the rotor. The motivation would be to provide a continuously coupled communication link that would not need to be switchingly driven.

Regarding claims 6-9.

FOREMAN in view of CORCORAN in further view of KOYAMA and JP 222489

Paten disclose a rotary contactless connector according to the same limitation in claim 1 except for the concentric circumferential location of the light emitting and receiving element.

Art Unit: 2836

Claims 6-9, 17, 18 merely rearrange the light emitting and light receiving elements into different configurations. The above claims are therefore considered as a mere rearrangement of parts and are rejected for the same reasoning as the related claim rejection above.

Regarding claims 10, 11.

Claim 10 is considered a special case of claim 1 wherein the rotary coupling is fixed. Therefore claims 10, 11 are rejected for the same reasoning as the claim 1 rejection above.

Regarding claims 14, 15,

FOREMAN in view of CORCORAN in further view of KOYAMA and JP 222489 Paten disclose the rotary contactless connector according to claim 13.

FOREMAN in view of CORCORAN in further view of KOYAMA and JP 222489 Paten do not disclose the second switching circuit whereby bi-directional communication is provided.

The Examiner takes official notice that switching circuits to provide bi-direction communications are well known in the art.

It would have been obvious to one having ordinary skill in the art at the time of this invention to provide the second switching circuit. The motivation would be to provide two-way communication across the coupling or connector.



***Response to Arguments***

Applicant's arguments with respect to claim 1-11 have been considered but are moot in view of the new ground(s) of rejection.

***Allowable Subject Matter***

Claims 19-21 allowed.

The following is a statement of reasons for the indication of allowable subject matter: the prior art does not teach or suggest to teach wherein one light emitting element output enters the range of two light receiving elements at the same time.

Any inquiry concerning this communication should be directed to Robert L. DeBeradinis whose number is (703) 306- 5857. The Examiner can normally be reached Monday-Friday from 8:30 am to 5:00 pm.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Brian Sircus, can be reached on (703) 308-31190. The Fax phone number for this Group is (703) 308-7722.

RLD

NOVEMBER 25, 2003

